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TO BUILD NAVAL TONNAGE ON THE LAKES.

The Secretary of the Navy has taken action of the highest importance to the shipbuilding interests of the Great Lakes. He has forwarded to the American members of the high joint commission sitting in Quebec an urgent recommendation for the abrogation of the agreement under the treaty of 1817, by the terms of which the United States and Great Britain were limited to the maintenance of one war vessel each on the lakes. At a conference which Congressman John B. Corliss, had with Secretary Long the department's action was submitted for the congressman's examination. It appears that Secretary Long recently appointed a board composed of Naval Constructor Dashiel and Lieutenants Saterlee and Seymour, to formulate suggestions as to the scope of the desired modifications of the present arrangement.

This board has reported to the secretary through Judge Advocate General Lemby, and the secretary in turn has forwarded the report to the commission with a strong endorsement of its conclusions. The report discusses the subject under three heads; first, the number, size and armanent of the war vessels to be maintained by each power on the lakes; second, the privileges to be extended to lake ship builders in the construction of war vessels; third, the maintenance of the naval militia on the lakes and the assignment to them of naval vessels for drill and cruising practice. Under the first head the board recommends that each power be authorized to maintain two war vessels of at least 1,100 tons each. The gunboat type of the general build and equipment of the Marietta is suggested as meeting the requirements of the United States on the lakes. No armament should be specified except that it should be "appropriate," for the reason that improvements in naval ordnance might render absolute any definite arrangement on this score.

The necessity for maintaining two vessels is insisted upon by the board for policing purposes and to facilitate naval recruiting on the lakes, where the hardiest and most skilled sailors are to be found. Further, there should be an understanding that no limit should be placed upon the number of light-house or revenue service vessels maintained. In addition, the United States should be permitted to construct and maintain a suitable naval station as winter quarters for the warships referred to. As to the second head, the board recommends that the lake shipyards be permitted to construct any type of vessels that can be sent to tidewater. At the present time this would limit the lake yards to gunboats, torpedo boats etc., but in the event of the construction of a deep waterway to the sea the largest battleships could be built on the lakes.

GRAIN RECEIPTS AT THE HEAD OF THE LAKES.

The receipts of wheat at the head of the lakes for the last week were 3,427,154 bushels, as compared with 2,588,816 bushels for the preceding week, and 2,684,427 bushels for the corresponding week one year ago. The shipments of wheat last week were 2,722,332 bushels, as compared with 2,722,325 bushels for the preceding week, and 2,395,961 bushels for the corresponding week one year ago. The increase of wheat stocks for the past week was 114,000 bushels. The flax receipts last week amounted to 654,736 bushels, and the shipments to 547,647 bushels. Other coarse grain receipts were as follows: Rye, 85,373; barley, 255,744; oats, 3,253; and corn, 2,231 bushels.

LETTER OF INQUIRY.

The postmaster at Detroit received the following letter about two weeks ago: "I enclose a letter to Leroy Sheldon, who is the son of Capt. Sheldon, master of a lake steamer and whom, I am informed, lives in your city. Leroy Sheldon is at his father's home. He served with me in the same troop and the enclosed letter gives him information the knowledge of which will enable him to do me a great service, and I not knowing any more definite address than Detroit, ask if you would be kind enough to locate Leroy Sheldon for me and have the letter delivered."

The postmaster writes the RECORD as follows: "The foregoing letter is self-explanatory. We are unable to locate Mr. Sheldon and thought you might be able to aid us in this matter through the columns of the RECORD. We are holding the letter at this office and would be pleased to hear from parties knowing the whereabouts of Mr. Sheldon or his son."

WELLAND CANAL TOLLS.

Mr. George T. Clark, as counsel to the Oswego Board of Trade, has submitted a brief to the Joint High Commission while in session at Quebec, in which he states that since the date of the order in council of February 13, 1893, and ever since, and now, the tolls and charges of the Canadian government upon vessels and principal articles of freight passing through the Welland canal and St. Lawrence canals are as follows: On vessels, about two cents per ton; on passengers, 10 cents for each passenger; half rates for persons under 21 years of age; on wheat, Indian corn, barley, peas, rye, oats, flaxseed and buckwheat, for passage eastward through the Welland canal, 10 cents per ton; for passage eastward through St. Lawrence canals only, 10 cents per ton; payment of said tolls of 10 cents per ton for passage through Welland canal entitles these products to free passage through the St. Lawrence canals; on coal, 20 cents per ton.

The peculiar adjustment of these tolls, Mr. Clark points out, has the effect of discriminating both against American shipping and American commerce, and of favoring Canadian shipping and Canadian commerce, notwithstanding the Washington treaty of 1871 provided in article 27 that the citizens of the United States should be permitted to use the Welland, St. Lawrence and other canals of Canada on terms of equality with the inhabitants of the Dominion of Canada. Taking the latest data available, Mr. Clark shows that:

Of the total of 957,728 tons of freight passing east through the Welland canal in 1896, 632,089 tons were carried in vessels of the United States and 325,839 tons were carried in Canadian vessels. Of the total of 285,667 tons of freight passing west on the Welland canal in 1896, 270,376 tons were carried by vessels of the United States and 15,291 tons were carried by Canadian vessels, or a total of 341,130 tons by Canadian vessels, and 902,465 tons by United States vessels.

The gross amount collected from vessels using the Welland canal in 1896 was $194,969.33, of which $63,530.87 was used in maintenance.

A cargo of 70,000 bushels of wheat or corn must pay, including tolls on the vessel, $275 to pass from Lake Erie to Lake Ontario, and a vessel carrying 1,700 tons of coal would be compelled to pay $400, which shows, says the brief prepared by Mr. Clark, why it is that only 27,000,000 bushels of grain passed down to the foot of Lake Ontario and 165,000,000 bushels was transhipped at the foot of Lake Erie in 1896, and it also shows why it is that only 223,445 tons of coal passed through the Welland canal in the same year, while 2,400,000 tons were shipped from Buffalo alone, although the latter port is farther from the coal mines of Pennsylvania than is Oswego, and this is so because the Welland canal tolls alone frequently equal and occasionally exceed the total amount of the frelght received for carrying coal by vessels sailing west from Buffalo.

For these reasons, and the effect that the higher rates of transportation have upon the consumers of flour and coal, the brief urgently recommends to the American commissioners the consideration of the tolls question, with a view to their entire abolition as being one of the very greatest moment.

WHALEBACK BARGES FOR THE MISSISSIPPI.

Several years ago Capt. Alex. McDougall, of Duluth, suggested the idea of operating steel barges on the Mississippi river. His plan contemplated the construction of steamers and tow barges and of handling them on the same system as prevails on the lakes. Prominent St. Louis capitalists have taken up the idea and it is said that in all probability a line of boats will be built as an experiment. If the deal is consumated Capt. Alex. McDougall will superintend the construction of the boats. All boats on the Mississippi river at present are of wood. Great carrying capacity on light draft will be one of the foremost elements in the proposed boats.

NEWS AROUND THE LAKES.

DETROIT.

Special Correspondence to The Marine Record.

The ferry steamer Excelsior is at the Detroit dry dock receiving part new decks and other repairs.

Ashley & Dustin announce that the steamer Frank E. Kirby will discontinue her daily round trips to Sandusky and the islands at the end of this week. Next week the Kirby will go down one day and return the next.

The government will remove the wreck of the steamer Toledo from the Lake Superior entrance to Portage Lake canal. W. H. Singer, has taken the contract to do the work in twenty days for $2,500. He will begin operations at once.

Capt. A. B. Davis, commander of the revenue cutter Morrill, has received orders to sail from Philadelphia as soon as the repairs to his vessel are completed, which will be some time this week. He expects to reach Milwaukee early in November.

The wooden steamer Gettysburg has been chartered by Alger, Smith & Co. to the Atlantic Transportation Co. and will be prepared for the trip to salt water as soon as possible. A new steamer will be built by the company this winter to take her place.

The dredge Birckhead of the Capt. Jas. Rooney fleet, has begun work on the U. S. government channel at Amherstburg. The tug Johnson, recently attending the Birckhead, has returned to Toledo, and the tug Tuthill will take the Johnson's place.

Lieutenant Commander Duncan Kennedy, U. S. N., ordnance officer at the Norfolk Navy Yards, has been relieved by Commander Impey, and will in turn relieve Lieutenant Commander F. O. Davenport, in charge of the eleventh light-house district, with headquarters at this port.

The steamer Lindsay, built by the Detroit Dry Dock Co. and one of the best built medium-sized boats on the lakes, under charter of the Atlantic Transportation Co., was found to draw too much water and will not be able to run the rapids in the St. Lawrence. She will therefore return to the lakes.

A bridge across the Detroit river is again being discussed by local vessel owners and railroad men. The fact that methods of sailing have changed somewhat since the bridge was last proposed has also changed the opinions of many vesselmen who were opposed to it at that time. Henry Russell, attorney for the Michigan Central road, said that they were willing to become part owners in a union bridge, providing it is not too far from Detroit.

It is now positive that the Detroit Dry Dock Company has been awarded the contract by the War Department to build a steel tug for engineering work on Puget Sound at a cost of $40,000. She will be about 100 feet over all, and of 250 horse-power. The hull and engine will be built at Wyandotte and the engine by the Dry Dock Engine Works, and the boat put together and given a trial at Detroit, then taken apart and shipped by rail to her destination, Seattle.

The Detroit & Lake Erie Railway Co. have purchased the Grand Trunk car ferry International from General Manager Hays, and will have it taken down to Sarnia at once, where they will make use of it for transferring cars across to Port Huron to the F. & P. M. railway. Extensive repairs to the Erie & Huron docks will require to be made before the boat will start running. Captain Egan, of the ferry Stauber and formerly of the G. T. R. car ferry Huron, has been appointed to take command.

The United States marshal seized the two car ferries, Mikado and Tycoon, belonging to the Michigan & Ohio Car Ferry Company, on Monday, at the Grand Trunk slip. The boats were attached by the Detroit Dry Dock Co. to satisfy repair bills contracted by the Michigan & Ohio Car Ferry Co. in 1897. The bills aggregate $1,600. Manager Moreton of the ferry company is out of the city, but it is thought that as soon as he comes back the boats will be bonded and returned to their route. The two ferries are now lying at the Solvay Process Co.'s dock, at the Rouge.

BUFFALO.

Special Correspondence to The Marine Record.

Capt. Golden, who is well known at this port, has left for the coast, in charge of the schooner Charles Foster.

The steamer Portage went into dry dock on Wednesday for survey and necessary repairs. She picked up a log in her wheel on Lake Linden, and before getting clear of it the rudder and stern post was damaged, but to what extent is not known until after the survey is held.

The steamer Aragon is the first of the lake vessels going to the Atlantic to meet disaster in the St. Lawrence river rapids. The Aragon stranded at the foot of the Cedar river rapids, and ran out 14 inches forward. An attempt will be made to float her by shifting her coal. A later report states that she was released and proceeded leaking.

Coal rates have remained unchanged during the week and 25 cents is still the quotation to Chicago with rather light chartering. The firmness and advance in grain freights ought to send coal rates ahead; yet, those who require ballast at this season of the year carry the coal anyway, and at a rate that barely pays the detention experienced in loading and discharging. It is thought likely, however, that an advanced rate will prevail within the next few days.

CHICAGO.

Special Correspondence to The Marine Record.

Grain freights advanced on Saturday to 2 cents on corn to Buffalo.

The schooner L. A. Simpson has been laid up for the season at Manistee.

The I. T. Line tug Satisfaction, is on their floating dry dock receiving a thorough rebuild.

Capt. David Carrier has been appointed master of the Canada-Atlantic Co.'s steamer German.

The Crosby Transportation Co.'s steel steamer Wisconsin is receiving an extensive rebuild at Johnston Bros., Ferrysburg, Mich.

The steam yachts Pathfinder and Laura S., and the sail yachts Allie T. and Vanenna have gone into winter quarters at South Chicago.

The steamer F. & P. M. No. 2 is in Burger & Burger's dry dock, at Manitowoc, receiving a thorough overhauling for winter service.

Capt. John Prindiville chartered the steamer Walter Vail for corn at 2 cents, and the barge Baltic for clipped oats at 1¾ cents, both to Buffalo.

At the Chicago Ship Building Co.'s shipyard the steamer T. W. Palmer has received some repairs, and one of McGillis & Lowe's dredges is in dock being calked all over.

The machinery and boilers of the steamer G. W. Morley, which was burned last fall off Evanston, have been purchased from the underwriters by the Dunham Towing and Wrecking Co., who will send a wrecking expedition to recover the machinery and boilers.

The passenger steamer Peerless, owned in Chicago by the Lake Michigan and Lake Superior line, was picked up by the steamer R. E. Schuck, and towed into Marquette on Tuesday. The Peerless was drifting helplessly from disabled machinery when sighted by the Schuck.

Capt. J. F. Smith & Son, Clarence, have built a dock and erected a warehouse 40 x 60 feet on the 300 feet of dock front recently purchased by them on the north side of the river, foot of Lake street, South Haven, Mich. The warehouse is being used for receiving fruit, prior to shipping by steamer.

Capt. Andrew Anderson, aged about 50 years, master and part owner of the schooner J. V. Taylor, of this port, was accidentally drowned by falling overboard from the main boom, which he had gone out on to hook the tackle, Wednesday morning, October 5th, at 9 a. m., when about 3 miles off Peninsula Point light, Green Bay. The deceased was one of the best and most kind hearted of men, and his sudden taking away has caused sincere regret among his many friends. He leaves a widow and an adopted daughter.

The following named vessels docked this week: The steamer Madagascar is in dock receiving 40 feet new keel amidships, and 60 feet aft, a new stem, 11 new bottom planks, and garboards and calking all over; the steamer Bon Ami is in for bottom calking; the steamer Grand Rapids was in for a new shoe, supplied by Donaldson Bros., shipsmiths; the barge S. M. Stevenson was in for some new bottom plank and calking butts; the steamer W. A. Haskell received repairs to stern bearing, had her wheel fastened and butts calked.

CLEVELAND.

Special Correspondence to The Marine Record.

The steel steamer Corona, of the Mutual line, was fitted with a new smokestack this week at the yards of the Globe Iron Works Co.

The tug Alva B., recently ran into and sunk by the D. & C. line steamer City of Detroit, has been raised and taken to the Ship Owners' dry dock for survey and final repairs.

On the Angeline dock at Ashtabula a cable on a McMyler hoisting machine broke as a bucket of ore was being taken from the steamer Geo. W. Roby on Tuesday. The boom struck one of the large machines, causing considerable damage.

The last Sunday trip between this port and Buffalo by the C. & B. passenger line, was run on Sunday last. From this time on to the close of navigation, or about December 1, a six day service will be given, the boats running daily except on Sundays.

Mr. Thos. W. Bristow has commenced business as consulting shipbuilder and surveyor, with offices in the Western Reserve building. Mr. Bristow has been superintendent of construction with the Detroit Dry Dock Co. and the Cleveland Ship Building Co. for the past twenty years.

Mr. Frank Morrison, the well known compass adjuster and manufacturer of nautical instruments, has enjoyed a brisk season's work and is still as busy as it is possible for him to be. Frank has earned and maintains the good will of a large number of masters, owners and shipbuilders.

The schooner Nellie Redington made a call at this port on Tuesday for a steam pump. She sprang a leak early Tuesday morning while bound down the lake, and reached this port with several feet of water in her hold. After being pumped out she proceeded to Buffalo, taking the pump with her.

Mr. E. W. Radder, a prominent yachtsman of this port, has written Capt. F. R. Frey, of Toledo, regarding the new rules adopted by the yacht racing union, saying the amendments should be taken up and acted upon so that the Toledo Yachting Association may not be behind the Ontario or eastern clubs.

Countess Adeline Schimmelmann, of Copenhagen, Denmark, accompanied by her two sons and seven interpreters, arrived here this week on the private yacht Duen. The countess is doing missionary work among sailors, especially those of her own nationality, and expects to encircle the earth in her travels. From here she will go on to Chicago and spend the winter at that port.

Capt. Thomas Wilson has decided to build a new steel steamer this winter, and has let the contract to the Cleveland Ship Building Co. The new vessel will be of about the same dimensions as the Rockefeller boat, Morse. The boat which the Cleveland Ship Building Co. has started to build as a stock job will probably be sold to A. B. Wolvin and others, of Duluth.

A rise in the ore rate from Duluth was reported on Tuesday, it being stated that some vessels now on their way up have been promised cargoes at eighty-five cents. Ore shippers are not pressed for tonnage, and some are holding out pretty stubbornly against further advance. In fact, some vesselmen say that big cargoes are not being offered at all. The Escanaba rate shows no tendency to advance.

Capt. Delaney, of Prescott, Ont., who is piloting the sail yacht of the Danish princess, called on several of his Cleveland acquaintances on Wednesday afternoon. Capt. Delaney piloted the steamer J. J. Hill to Montreal this season and has been engaged at the work for the past forty years. His son is located and engaged in pilot work at St. Catharines, Ont., and is also highly spoken of among those whom he has served.

The receipts of ore and shipments of coal for this district during the month of September were: Ore—Cleveland, 383,049 gross tons; Ashtabula, 390,820; Fairport, 184,051; Conneaut, 262,916; Lorain, 69,672; total, 1,290,508 gross tons. Coal—Cleveland, 141,453 net tons; Ashtabula, 76,492; Fairport, 27,022; Conneaut, 13,249; Lorain, 8,116; total, 266,332 net tons. As last month Ashtabula leads the district in the receipt of ore and Cleveland in the shipment of coal.

Capt. Alex. McDougall being asked if there had been any recent developments regarding the construction of steel barges for use on the Mississippi river, said: "Every year for the past ten this matter of steel barges for the Mississippi river comes up about this time. It is just as regular as the seasons, but there is nothing new about it as far as I know, and the report may now hang off until next October, when, no doubt, it will be started again in some manner." Capt. McDougall reports that the proposed new dry dock will, undoubtedly, be constructed this winter.

The following notice has been sent out from the branch hydrographic office here by Arthur Dovale, nautical expert in charge: The wrecked steamer Toledo, which was stranded near the Lake Superior entrance of Portage ship canal on the 29th ult., is a menace to navigation. It lies in line of and about 600 feet outside the piers, with two red buoys marking the extremities of same. At night the patrol from the life-saving station warns approaching vessels of the danger. Vessels should keep to the eastward of the wreck. It is dangerous for steamers with more than one consort to make the entrance in rough weather while the obstruction is there. The wreck will be removed by the United States Engineer Corps as soon as the consent of the War Department is obtained.

THE TUG J. C. EVANS.

The initial trip of the new tug J. C. Evans, owned by the Dunham Towing and Wrecking Co., of Chicago, was made Thursday, October 6th, the start being made from the docks of the Anchor Line. A short trip on the lake was taken, which was enjoyed by a large number of invited guests. The new tug is named in honor of Mr. Jas. C. Evans, agent of the Anchor line of steamers in Chicago. She is 90 feet long over all, 18 feet beam and 10 feet depth of hold. She is the old tug Jas. McGordon, entirely rebuilt, only enough of the old tug being retained in the new to keep her original shape and model; this was accomplished by taking out one frame at a time and replacing it. She is 4 feet longer and 15 inches deeper than the old tug. She has iron deck frames and shelf pieces, and a new departure in tugs which has been adopted for the Evans, is a (so-called) log rail, which is built just on top of the plankshear, doing away with all stanchions and stringers; it is 13 inches high from the deck and is built up solid by placing pine timbers one on top of the other, decreasing in width from 10 inches at the bottom to 8 inches on top, with a 4-inch oak rail on top of this. The Evans also has iron cleats and tow posts. Her engine is high pressure with one cylinder, 24½ inches diameter, 26 inches stroke, with a universal coupling on the shaft and an independent feed pump, another new departure in high pressure tugs. She has a new steel fire-box boiler, 12 feet long and 7½ feet in diameter, with two furnaces, is allowed 160 pounds of steam, and considered one of the best fire-box boilers ever built, as great pains were taken in its construction to make every staybolt and brace fair and straight. The Evans has been given steam steering gear.

WE have received from the Chicago Pneumatic Tool Company, Chicago, Ill., two special edition catalogues, one being devoted to the description and illustration of pneumatic riveters, hammers and drills, and the other to wood boring machines, breast drills, car jacks and pneumatic painting machines. Both catalogues contain illustrations showing the various devices in use.

FLOTSAM JETSAM AND LAGAN.

About 13,500,000 tons of iron ore will have been moved by water this season, if the November shipments equal last year's.

The fleet of vessels bound for the coast is proving a boom to the canal tugmen of the Welland who have their hands full towing the craft.

A charter of the Northern Steamship Co. this week is $3,500, for a passage from Duluth to Buffalo. This charter was secured for a large steel steamer.

Seventeen sailors killed and 84 casualties, all told, was the total loss suffered by the United States Navy during the war. The figures have just been compiled at the Navy Department.

The crew of the Hammonds Bay life-saving station have purchased the steam yacht Annetta of Au Sable from Mr. Dietz on private terms. She will be used by the crew as a supply boat.

According to Capt. James Ganley of the steamer Telegram, at Sault Ste. Marie, a tidal wave of unusual magnitude swept over a portion of Lake Superior last Tuesday evening. He says it was four feet in height.

A vivid and stirring naval story, a true one, is told by Stevens Vail, one of the Yankee's crew, of the Naval Reserve, in the November Scribner's. It describes "A Night Escape" off the coast of Cuba.

A huge waterspout on the lake some two or three miles out from Pentwater was seen one day last week. As nearly as could be estimated by those who witnessed it, it was traveling at the rate of a mile a minute.

Among recent patents there is one relating to the breaking of propeller shafts. By carrying duplicate parts made in lengths, tongued together, and strengthened by coupling and bolts, the inventor says that the breakage can be repaired in three hours or even less.

There is a probability that the Wheeler shipyards will be in operation during the winter. Repairs are now being made to the machinery, and the entire yard is to be put in first-class condition at once. This work is being done under the supervision of an employe of the Union Trust Company.

A Glasgow telegram says: An order has just been placed by Mr. C. L. Watson, the well known yacht designer, for a large sailing yacht of 500 tons. The boat is for Mr. Coates, of Paisley, and when completed will be the largest sailing yacht in the world. The builders of the Valkyrie, Messrs. D. & W. Henderson, have secured the contract.

There are ten barges at West Duluth lumber docks, either loading with lumber or waiting to be loaded. Many of these will tie up after reaching lower lake ports, while some will make two or more trips before the season closes. There is considerable lumber on the docks at West Duluth that will not be moved until next season. Shipments this year have been fully as large as any preceding year.

Toledo reports the trade by lake in coal as being very dull. Some cargoes are offering at 30 cents for Lake Michigan and 20 cents for Lake Superior points, but carriers prefer to go light rather than accept rates that have prevailed during the summer. Trade should now be better than some time ago, as coal is needed up the lakes. The rates must come up before vessel owners will show an inclination to take cargoes.

Vesselmen and shippers are beginning to complain about the blockades and prospective blockades at the port of Buffalo. Shippers of grain at the head of the lakes seem determined to have their grain go to two or three elevators at Buffalo instead of dividing the grain up among the several elevators of the port. Four or five elevators at Buffalo are handling practically all the grain that is being forwarded to that port.

The steamer Wisconsin, of the Crosby Transportation Co., running between Grand Haven and Milwaukee, is receiving an extensive rebuild at Ferrysburg. She is receiving a steel cabin, and will be practically a new boat when finished. Steel ship building is an industry that is just starting in Ferrysburg, Johnston Bros., the boiler manufacturers of that place, and Duncan Robertson, the veteran shipbuilder, are seriously thinking of putting in a complete steel ship building plant.

The fastest Atlantic liner is to be discounted in point of speed, says Kuhlow's, for the Vulcan Company, Stettin, has just been instructed to build a boat for the Hamburg-American Company which is to excel in speed every liner yet afloat. The new vessel is to be close on 690 feet long, with a beam of 66 feet 6 inches, and she is to have a guaranteed speed of 23 knots on the Atlantic, and 23½ on trial. She is to be propelled with two sets of quadruple-expansion engines, collectively equal to 36,000 i.h.p.

A northern Michigan special to the RECORD says: The lumbering season is opening unusually early throughout the Lake Superior district, a number of camps having been established already. The lumber business has picked up wonderfully and with demand brisk and stocks smaller than for five years everyone engaged in the lumber trade, from the mill owner to the last "swamper" feels encouraged over the prospects. There is a scarcity of men and experienced hands will get higher wages than usual.

Recent reports credited the steamer Superior City with having gained the record for grain cargoes, and the schooner John Fritz, with making a new ore cargo record. Both are incorrect. The Superior City, according to a letter from Mr. A. B. Wolvin, of Duluth, her owner, carried on her last trip 200,000 bushels of wheat and 41,800 bushels of flax, equal to 7,175 net tons. On a previous trip she carried 266,550 bushels of corn, equal to 7,463 net tons. The stage of the water is lower, as is usual at this time of year, and it is not probable that there will be any further gaining of cargo records for the balance of the fall.

The schooner A. J. Rogers, which went on a reef near Old Mission light-house Sunday night, now lies sunk in fifty feet of water, about six miles off Old Mission Point. When the vessel struck the reef a hole was stove in the bottom, and Captain Frank Coulsin and crew escaped to the light-house. The abandoned schooner was afterward released by the wind, drifted out in the lake, and sank. She is now going to pieces. The Rogers was bound from Elk Rapids to Detroit with a cargo of 595 tons of pig iron, shipped by the Elk Rapids Iron Company and consigned to the Peninsular Car Company. Both cargo and vessel were insured.

The single-decked wooden steamer Gettysburg has been chartered by Alger, Smith & Co., of Detroit, to the Atlantic Transportation Company, and will be prepared for the trip to salt water as soon as possible. The price is not given out, but it is a good one, as the boat is desired for towing purposes. Manager John Millen of the company's logging interests, says they are going to log extensively in Minnesota and other places this winter. This may mean a new steamer, and again it may not. Plenty of tugs can be found at cheap prices to do the raft towing, whereas the amount of timber now owned by the company on American land might not warrant the building of a new towing steamer.

DETROIT MARINE POST OFFICE.

LETTERS REMAINING ADVERTISED IN DETROIT, MICH., POST OFFICE OCTOBER 13, 1898.

To get any of these letters, addressees or their authorized agents will apply at the general delivery window or write to the postmaster at Detroit, calling for "advertised" matter, giving the date of this list and paying one cent.

Advertised matter is previously held one week awaiting delivery. It is held two weeks before it goes to the Dead Letter Office at Washington, D. C.

Bartholomew Bert, Str. S. C. Hall
Bashaw Oliver
Chamberlin Pat, Sch. Jno. Martin, 2
Crawford Chas., Sch. Herald
Edwards Frank, Str. City Cleveland
Eldridge Claud E., Str. Tower
Gongau Chas., Str. Folsom
Granville Capt. Frank, Sch. Ontario, 2
Goodberg Albert
Hanly Capt. C. C.
Hartney John, Str. Presley
Hasty Fred C., Str. Brazil
Jessamine C. A., Str. Presley
Lassial Adolph N., Str. Presley
La Duke Frank
Northup Fred, Sch. Nelson
Strelow Gust, Sch. Unadilla
Smith Louis, Str. Specular
Toft John
Wood Josh.

F. B. DICKERSON. P. M.

VESSELS CLASSED.

Vessels classed and rated by the American Shipmasters' Association in the RECORD of American and Foreign Shipping this week are as follows: American barge, J. B. King & Co. No. 17, owned by J. B. King Transportation Co. American barge, Mount Carmel, owned by the Philadelphia & Reading Co. American screw tug, Valley Forge, owned by the Philadelphia & Reading Railroad Co. American screw, Winifred, owned by Messrs. Miller, Bull & Knowlton. American tern, Margaret A. May, American ship, A. J. Fuller, British half brig, Electric Light.

THE LATE CAPT. CHAS. WELLS.

Capt. Chas. Wells died at Ogdensburg this week, at the age of 78 years. Since the autumn of 1897 Capt. Wells has been gradually failing and unable to be at his well known post on the deck of the ferry boats. He was a captain of a boat at eighteen years of age, showing his natural inclination for sailing and his extraordinary ability as a seaman. For twenty years he was captain of the Milton and Florence, ferries plying between Ogdensburg and Prescott. He had a wide acquaintance and could relate stories of the early life of the river that have interested many willing listeners.

The captain left three sons: Starr, Walter and Lawrence, who are residents of Ogdensburg.

TURBINE PROPELLED CRAFT.

United States Consul Metcalfe, at Newcastle-on-Tyne sends to the State Department a report that the builders of the wonderful turbine propelled boat Turbinia, which created such a sensation at the British naval review by her extraordinary speed, have begun the construction for a foreign government of two boats of the same style about 200 feet long and with 10,000 horse-power. They are guaranteed to make at least 35 knots per hour, but as they are twice the length, six times the weight, and five times the power of the Turbinia, the consul says it will be interesting to see how far they will exceed her performance of 35 knots.

WEATHER BUREAU.

(Explanation of the daily weather map.)

This map presents an outline of the United States and Canada, showing the stations where weather observations are taken daily at 8 a. m. and 8 p. m., seventy-fifth meridian time. These observations consist of readings of the barometer, thermometer (dry and wet), directions and velocity of wind, state of weather, amount, kind and direction of the clouds, and amount of rain or snow; they are telegraphed to Washington and to many of the Weather Bureau stations throughout the country for publication on the maps. Solid lines called "isobars," are drawn through points having the same atmospheric pressure; a separate line being drawn for each difference of one-tenth of an inch in the height of the barometer. Dotted lines, called "isotherms," connecting places having the same temperature, are drawn for each ten degrees of the thermometer. Heavy dotted lines, inclosing areas where a decided change in temperature has occurred within the last twenty-four hours, are sometimes added. The direction of the wind is indicated by an arrow flying with the wind, or opposite to the ordinary vane. The state of weather—whether clear, partly cloudy, cloudy, raining, or snowing—is indicated by the circular symbol. Shaded areas, when used, show where rain or snow has fallen since the last observation.

The general movement of storms in the United States is from west to east, similar to a series of atmospheric waves of which the crests are designated on the map "Highs," and the troughs or depressions "Lows." These alternating Highs and Lows have an average easterly movement of about 600 miles per day.

High winds, with rain or snow, usually precede the Low area, often extending to a distance of 600 miles to the eastward of the center of the storm. In advance of the Low the winds are generally southerly, and consequently bring high temperature. When the center of the Low passes to the east of a place the wind at once shifts to the west or northwest, bringing low temperature. The temperature on a given parallel west of the Low may be reasonably looked for on the same parallel to the east when the Low has passed, and frost will occur along and north of an "isotherm" of about 40°, if the night is clear and there be but little wind. Following the Low usually comes an area of High, bringing sunshiny weather, which in its turn is followed by another Low.

By bearing in mind a few general rules as to the direction and rate of movement of the Low and High, with the blowing of the wind from the High towards the Low, and studying the map carefully, coming weather changes may frequently be forseen. The centers of Lows do not, as a rule, move across isotherms, but follow their general direction. Areas of low pressure frequently move to the south of east from the Rocky Mountains to the Mississippi and then change direction to the north of east over the eastern half of the country. Storms in the Gulf of Mexico occasionally move to the west or north of west, but after reaching the coast they generally change direction and move to the northeastward. High areas move to the southeast and are usually attended by fair and cool or cold weather. A cold wave is always accompanied by a High.

The cloud and rain area in front of a Low is generally about the size of the latter and oval, with the west side touching the center of the Low in advance of which it progresses.

When the isotherms run nearly east and west no decided change in temperature will occur. If the isotherms directly west of a place incline from northwest to southeast, it will be warmer; if from northeast to southwest, it will be colder. Southerly to easterly winds prevail west of a nearly north and south line passing through the middle of a High, also east of a like line passing through the middle of a Low. Northerly to westerly winds occur west of a nearly north and south line passing through the middle of a Low and also east of a similar one through the middle of a High.

An absence of decided waves of High or troughs of Low pressure indicates a continuance of existing weather which will last till later maps show a change, usually first appearing in the west.

The temperature of the air as published on the map is observed with a dry-bulb thermometer, and also with a wet-bulb thermometer—that is, one whose bulb is covered with a moist wrapping. The evaporation from the wetted surface, if the air is not saturated with moisture, is more rapid than from the dry bulb, in proportion to the relative amount of aqueous vapor, and this produces a lower temperature. The difference of temperature between the readings of these two thermometers suffices to compute the relative humidity of the atmosphere. The temperature of the wet bulb is also called the sensible temperature, because the sensation of heat on the skin agrees more closely with its indications than with those of the dry thermometer.

NEW PASSENGER STEAMER FOR DETROIT.

The people who control the Red and White Star lines of river steamers have definitely decided to construct a palatial steamer to accommodate their rapidly increasing excursion business.

The passenger traffic of the Star lines between Detroit, Toledo, the St. Clair Flats resorts and Port Huron reached phenomenal proportions this season, and it has decided the company to make the heavy expenditure necessary to construct a steamer capable of carrying 4,500 passengers.

Traffic Manager Bielman has lately returned from a visit to the east, where he devoted his time to investigating the merits of the different types of passenger steamers. While pursuing his search in New York city he found his ideal realized in one of the Hudson River Day Line Company's steamers, the New York. He found that the famous iron steamers, New York and Albany; of this line, were unrivaled in point of elegance and comfort, and that they had the lightness, grace and beauty of a yacht.

When Mr. Bielman returned to Detroit and reported the result of his researches, the stockholders of the Red and White Star lines were equally impressed with the surpassing merits of the New York, and decided that with a few minor changes she would be just the craft for the excursion business out of Detroit. A description of the New York is a description of the steamer that the Red and White Star lines will order constructed.

The steamer New York is the fastest side-wheel vessel afloat, said Mr. Bielman, and being constructed exclusively for summer tourist travel, it has a lightness, grace and beauty that cannot be obtained in a vessel that carries freight. The hull of the New York was built at Willmington, Del., by the Harlan & Hollingsworth Company, and is, with the exception of the deck frame, made of iron throughout. She measures 341 feet in length, breath over all 74 feet, with a tonnage of 1,850 gross tons. The engine was built by the W. & A. Fletcher Company. It is a standard American beam engine, with a cylinder 75 inches in diameter and 12 feet stroke of piston, and develops 3,850 horse-power, steam steering gear is used.

One of the most admirable features of this queen of river steamers is her feathering wheels, the use of which not only adds materially to her speed, but does away with the jar or tremor common to boats having the ordinary paddle wheels. The exterior of the New York is of pine, painted white and relieved with tints and gold. The interior is finished in hardwood cabinet work, ash being used forward of the shaft on the main deck, and mahogany aft and in the dining room. Ash is also used in the grand saloons on the promenade deck.

One feature of the saloons is the number and size of the windows, which are so numerous as to almost form one continuous window. Seated in one of these saloons, the tourist who prefers to remain inside enjoys equally with those outside the passing scenery.

The private parlors on the New York are provided with bay windows, and are very luxuriantly furnished. The dining room on the New York is located on the main deck aft, a feature that will commend itself to tourists, since, while enjoying meals they will not be deprived from viewing what is going on outside. While the carrying capacity of the New York is 4,500 license for 2,500 only is applied for, thus guaranteeing ample room for all, and the absence from crowding, which is so essential to comfort.

When complete, our new boat will vary but little from the above description.

The Greyhound, which is the largest steamer controlled by the Star lines at the present time, is 268 feet long over all and 60 feet over guards, and will look like a liliputian alongside of the new steamer.

Traffic Manager Bielman says that the Red and White Star line people believe in patronizing home industry, and the new steamer will be built by the Detroit Dry Dock Company, if that concern gets in pretty close to what is figured the craft ought to cost.

The hull of the new Star line steamer will be considerably deeper than the New York's; and her engines will be like the City of Toledo's, which will do away with the walking beam and greatly improve the appearance of the craft.

The principal stockholders in the Red and White Star lines are: A. A. Parker, B. W. Parker, John Pridgeon, Jr., Muir estate, Newberry estate and C.F. Bielman.

LAKE SAWMILL INDUSTRY.

The sawing season this year on the Menominee will last as long as the river remains open. Some of the mills will probably be sawing until the last of November, or the first of December.

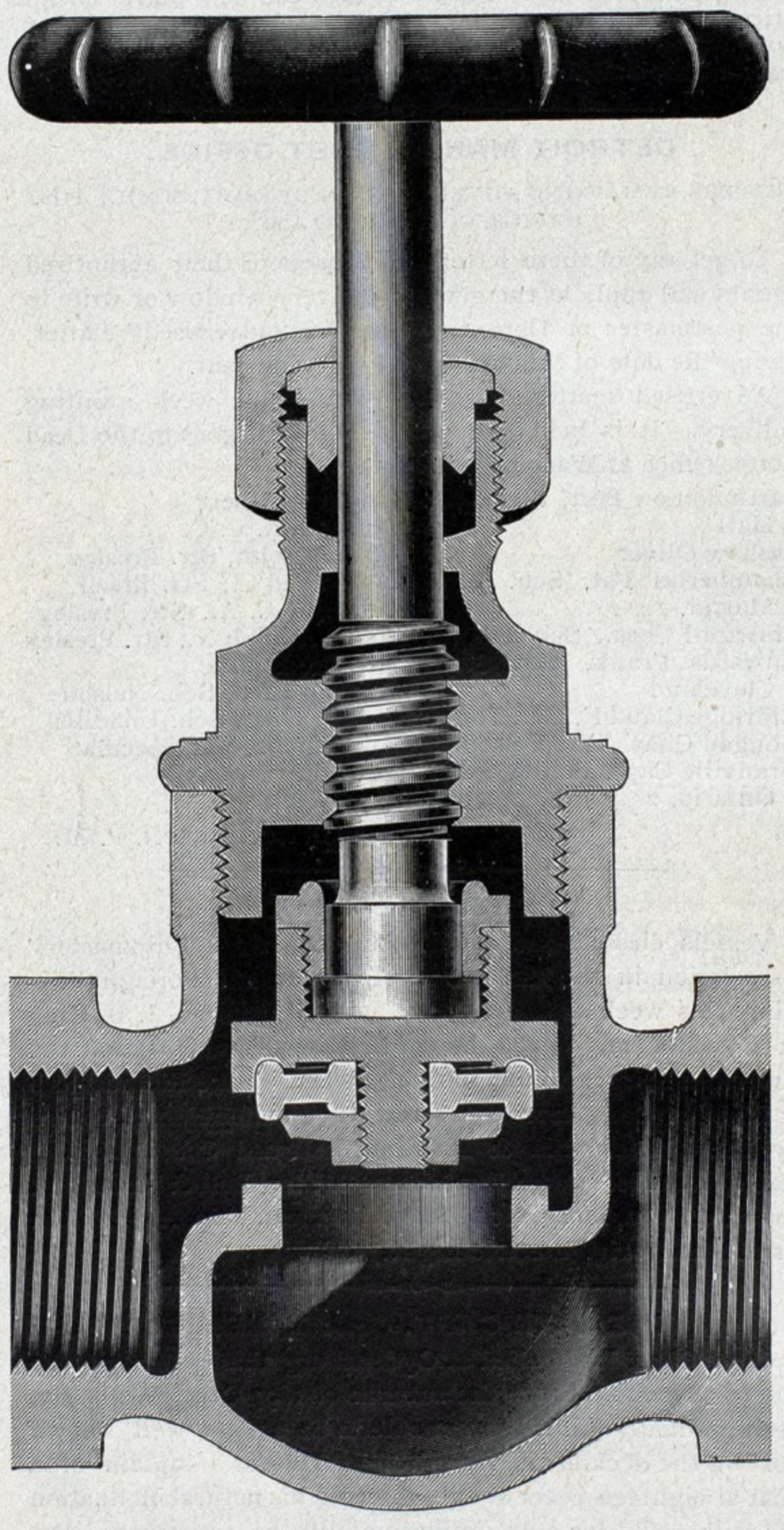
The cut of the twenty Wisconsin mills this season will exceed 300,000,000 feet, which is about 70,000,000 feet more than was cut in 1897. This is due to the improved condition of the lumber market and the general prosperity of the country, which reflects itself in the demand for lumber.

The Boom Co. has sorted up to date over 260,000,000 feet, and by the end of the sorting season will have sent to the various mill pockets about 300,000,000 feet. The crop of logs put in last winter was large. Notwithstanding this increased cut little lumber will be left on the docks unsold this summer, and the amount to be put in this winter promises to be fully as large if not larger than last year.

CRANE'S EXTRA HEAVY COPPER DISC GLOBE AND ANGLE VALVES.

(ILLUSTRATED.)

It is desirous to point out some of the merits of heavy copper disc globe and angle valves. The strength of the



body of the valve is so great, that it cannot be strained and thrown out of shape by the expansion and contraction of the steam lines. It is a well known fact that valves heavy enough to withstand a high pressure of cold water, fail when placed in service, for the reason that strains due to temperature are so far in excess of those generated by the test pump. This point is emphasized when steam pressures of 150 to 250 pounds are employed. It follows that to produce a serviceable valve for high steam pressures the walls of the valve must be much heavier than would be necessary, if no other strains than those due to pressure had to be considered.

The removable disc is made of soft copper turned up true in a lathe. This disc is reversible, a feature which will be appreciated by marine engineers who might be caught with a cut disc at a distance from a port where such supplies are carried. Copper in itself is an ideal metal for valve discs being soft enough to make a joint, hard enough to resist the erosive action of high pressure steam and with a co-efficient of expansion so near that of brass that it expands and contracts in exact ratio with the body.

The stuffing box is large and provided with a gland.

A reference to the accompanying cut will show that when the valve is opened to the full extent the stuffing box may be repacked without shutting off steam. To accomplish this the top of the disc holder is turned off in order to make a tight joint against the under side of the bonnet. Each valve is tested to 800 pounds water pressure and 250 pounds steam.

These valves are now in service on four steamers of the Zenith City Transit Company; six large steamers built by the Wheeler Company at West Bay City for the Rockefeller interests; the yacht Pathfinder and many others, all carrying extremely high pressures.

NOTES.

THE Nevsky shipbuilding yard has received an order for twelve torpedo boat destroyers, each of about 350 tons displacement, of the tpye of the Japanese boats built by Yarrow. These works have, according to the Times correspondent at St. Petersburg, already in hand ten Sokols, and two more vessels of the same type built at Abo, Finland, are expected in the course of the next few days. The Russian Admiralty have decided to supercede the present Du Temple boilers in all their first-class torpedo boats by Yarrow boilers. It is also worthy of note that the battleship and cruiser ordered by Russia from Messrs. Cramp, of Philadelphia, will have water-tube boilers of the Niclausse type, whereas all the recent ships have Belleville boilers.

IT has been decided by the officials of the revenue cutter service to send the Gresham to Porto Rico for duty there. The Gresham, which was built for duty on the lakes, has had her station changed several times. When the war broke out she was turned over to the navy and ordered to the South Atlantic waters, but before she was put in readiness for service the war suddenly terminated. Then the Gresham was ordered to Boston, since which time orders were issued sending the cutter to Porto Rico, where she will probably remain permanently. The Morrill, will be sent to Milwaukee in place of the Gresham, but no ships will be sent to the lakes in place of the Algonquin and Onondaga, which were intended for service there, but ordered to the Atlantic coast, and consequently the lakes will practically be without revenue cutters for some time to come,

IT appears to me that the Board of Trade, in dealing with a master on any other ground than on matters arising out of his navigation, is not only exceeding its power, but that it was never contemplated that the Board should be constituted a criminal court. What the Board of Trade, by its certificate implies, is that the master is a competent navigator; it does not guarantee that he is a Christian, or a humane man, or a teetotaller or anything else. This is one of those administrative abuses that are apt to creep in where irresponsible power is placed in the hands of officials. What steps may be necessary for a master in his opinion to take to control his crew, if they are insubordinate, has nothing whatever to do with the certificate, which simply refers to navigation. The Board rightly suspends a man who shows that he is not competent to navigate safely; and I think that attention should be given to this matter by members of Parliament who occasionally vouchsafe to take an interest in shipping matters. Suppose a master were accused of immorality on shore, would that be a reason for suspending his certificate?—Fairplay, London.

THE Bessemer ores of Wisconsin, Michigan and Minnesota, are as good material as the world knows of, and these ores are delivered at a total cost of $2.55 per gross ton at Pittsburg furnaces, whereas, in 1880, the average cost was round $7 a ton. In that year the lake region contributed 1,677,814 tons of ore to the eastern and middle state iron trade, while the states of New York, New Jersey, Pennsylvania and Ohio, produced 4,243,372 gross tons. In 1896 the total ore production of the United States was 16,005,449 tons, and the lake ranges contributed 10,566,359 tons, or two-thirds of the whole. And this great total of lake ores, shipped in 1896, advanced to 13,681,522 tons, in 1897. The ore is carried to the coal, for the reasons that the coal beds are nearer the great markets for finished iron materials, and because the return freight on coal, needed in the lake ports and other points in the northwest, partly compensates for the carriage of the ore. In 1897 the coal carried by iron ore lines, on return trips was 6,500,000 tons, or about half the total ore tonnage; and as rates on coal are higher than on ore, it follows that the cost of ore is much less than it would be if the cars and vessel ran back empty.

AMERICAN PIPES IN GLASGOW.

Kinglake, in his "History of the Crimean War," relates how the English admiral left a single frigate to watch the Russian fleet while he sailed to form a base to the army. He adds that people had previously heard of the soverignity of the seas; now they saw it. A somewhat parallel passage might be written about foreign competition. The citizens of Glasgow have heard much about, and not a few have scouted the possibility of it in unmeasured terms; but when they see American cast-iron pipes laid in their streets they will have visual evidence which it will be impossible to controvert. An order for 1,000 tons has been given to Messrs. R. D. Woods & Co., of Philadelphia, in spite of the urgent efforts of a part of the City Council to secure the order for Messrs. R. Maclaren & Co. The facts are very simple. Tenders were advertised for, and the American firm offered to do the work for £4,965 7s 6d, while the Scotch firm wanted £5,641 os 6d, a difference in favor of the American firm of £675. The fact that the foreign pipes would be in 12-foot lengths instead of the usual 9-foot, was made an excuse for readvertising. The same firms tendered again. Woods reducing their offer by £73 6s 7d, and Maclaren by £682 12s 6d. The American pipes were still the cheaper, but the water committee added £150 to the tender for the cost of a testing machine, and proposed to give the order to their fellow townsmen, who, presumably, had a testing machine which could be used. Some members of the City Council, however, objected to such unfair dealing, and an amendment dividing the contract was proposed and carried. According to the motion the Glasgow firm were to have all the small pipe to make, and this they refused to undertake at the price named. Eventually it was decided to award the entire order to Messrs. Woods. In the course of the discussion it was broadly hinted that the Scotch pipe founders had long taken advantage of the city of Glasgow, and that by mutual arrangement they had eliminated all serious competition for these contracts. It was stated that similar pipes were supplied to Edinburgh for 10s a ton less. We do not know how much truth, if any, there is in these statements, but it is not likely that such tactics will be repeated. It is a serious thing, not only for Glasgow, but also for the entire country, that American goods should be coming here in such large quantities, and British manufacturers, both masters and workmen, need to take the subject to heart. Of course, we know the reasons that are alleged—that our works are busy at remunerative rates, and that the American goods make no profit, and so on. The one incontrovertible fact is that the Americans have supplied their own market, and have a surplus to export. When a nation gets into that position it must sell its goods for what it can get for them, and as long as it has its protected home market, it can stand the process a long time. The most remarkable feature in American manufacturing has been the wonderful decrease in working expenses and carriage during the last five years; and there is no reason to believe these items have yet reached the bottom. We do not know whether the Glasgow contract will show a profit or a loss to Messrs. Woods, but we are certain that the Scotch founders have not heard the last of American pipes.—Engineering.

AUTOMATIC RELEASING HOOK.

(ILLUSTRATED.)

In April, 1894, the first sale of the Standard automatic releasing hook was made. Since that time, and up to the present, more than eight thousand sets have been sold. This year the demand was so great that the resources of the manufacturers were taxed to fill the orders. This increase was brought about by the demand from the United States Navy, who, after trying it for several years, decided that it was the simplest, best and most reliable of the many devices invented for the purpose intended. They have equipped all the vessels with it and ordered a supply for all the navy yards and stations. All this will tend to verify the old saying that the "proof of the pudding is in the tasting of it."

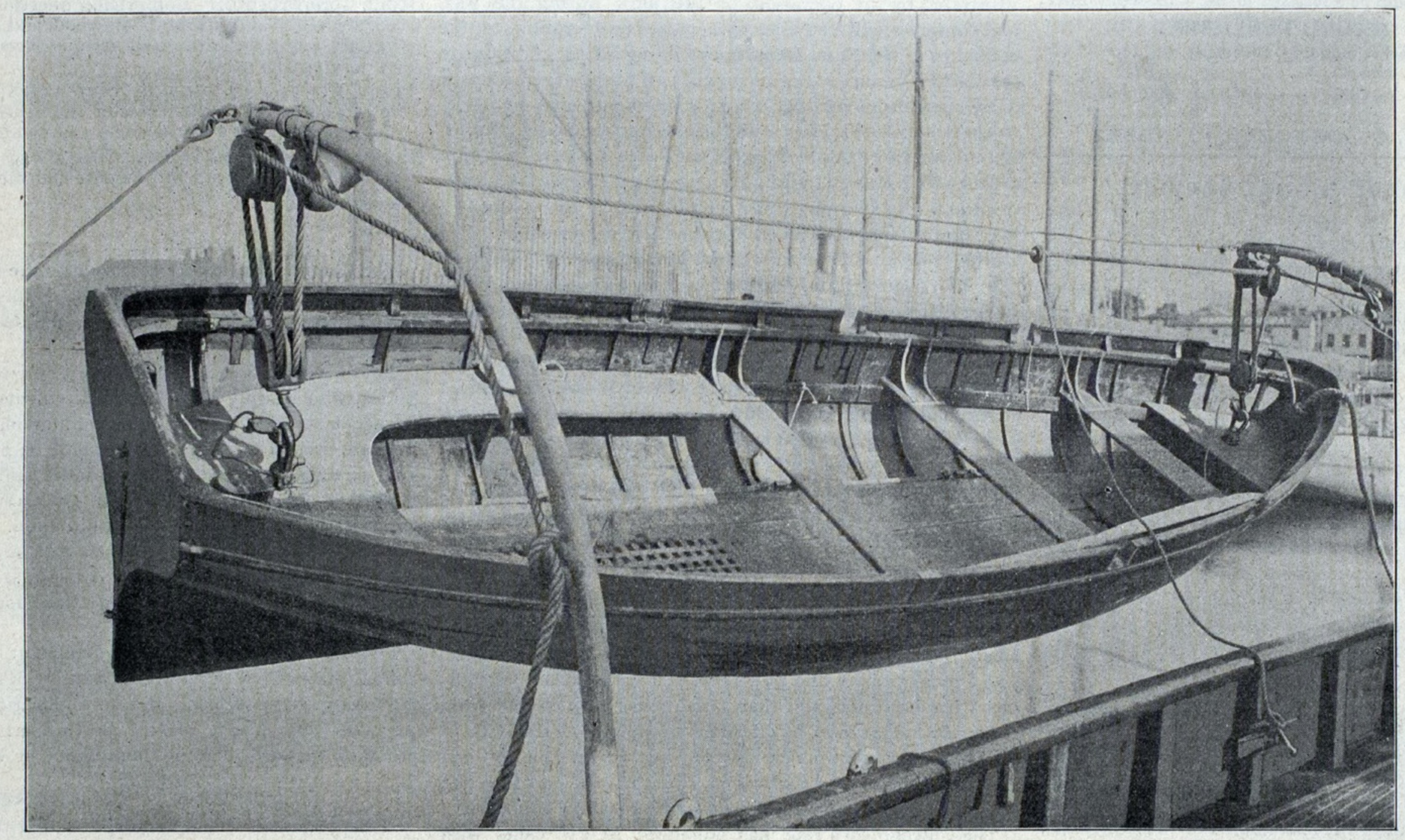
Much time and brain energy has been devoted to the production of a device that would fill the requirements at all times and conditions of the sea. Many devices have been brought forward which, under favorable circumstances, would work, but, at a critical time and when most needed, failed to function, thus resulting in serious consequences to those in the boats and a failure in the object for which they were created. Many of them are complicated in construction, and so placed in the boat as to be hard to get at to oil and keep free from ice, and to avoid rusting are so covered with paint as to destroy their effectiveness. They are liable to be inopportunely released, either from the davit heads or at an improper distance from the water, thereby making a bad launch of the boat.

The person in the boat whose duty it is to operate the detaching gear is liable to be so interfered with in the time of excitement and confusion as not to be able to pull the lever at the right time, thereby destroying the object for which the apparatus was created and making it less reliable than a plain hook.

One of the difficulties to overcome in the sale of the Standard automatic releasing hook is the preceding failures in this direction that have made people skeptical, and only by successful progressive stages can old prejudices be eliminated.

The Standard automatic releasing hook possesses the following named qualities which make it the most reliable device of its kind known: Simplicity of construction.—The part that belongs in the boat is placed so as to be easy to get at thus enabling one to free it from ice. It is made of a non-corrosive metal possessing the tensile strength of steel. The falls are so rove as to cause both ends of the boat to detach simultaneously irrespective of which end strikes the water first. It can be hooked on in the roughest sea or darkest night without danger of injuring the hands of those hooking it on.

Among the steamship lines in the west who were first in that section to see the merits of the device, and are always on the alert for anything that will add to the safety and comfort of their patrons, is the Goodrich Transportation Co., of Chicago.



Automatic Releasing Hooks for Boats' Davit Tackle, as Manufactured by the Automatic Releasing Hook Co., New York.

DETROIT TONNAGE FIGURES.

The quarterly report of entries and clearances for the port of Detroit is as follows: Number of vessels entered from Canada 216; cleared for Canada, 210; entered from domestic ports, 402; cleared for domestic ports, 409.

Entries of dutiable merchandise, 727; entries of merchandise free of duty, 503.

Quarterly report of tonnage of Detroit; one hundred and four sail vessels, tonnage, 37,462 gross, 35,685 net; 143 steam vessels, wood, tonnage 90,304 gross, 70,285 net; nine barges, wood, 1,461 gross, 1,423 net; one iron vessel, sail, 3,265 gross, 3,154 net; 24 iron steam vessels, 51,765 gross, 39,243 net; one temporary register, sail, 10,888 gross, 1,034 net; one temporary enrollment sail, 10 gross, 10 net; two temporary enrollments steam, 1,070 gross, 823 net; one temporary enrollment steam steel vessel, 3,655 gross, 2,966 net. Total vessels engaged in trade, 286; total tonnage, 190,080 gross, 154,596 net. Permanent enrollment, sail, pleasure yachts, 177 gross, 156 net; temporary enrollment steam pleasure yachts, 21,687 gross, 424 net; three iron pleasure yachts, 292 gross, 181 net. Total pleasure yachts in district, 34. Tonnage, 1,156 gross, 761 net. Total number of vessels and total tonnage of vessels, 320; tonnage, 191,236 gross, 155,257 net.

There were two vessels built during the past quarter with a gross tonnage of 3,655 and net 2,976.

Number of vessels inspected during quarter, 57, with gross tonnage of 23,422.

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A COASTGUARD SIGNAL SERVICE.

A complete history of the operations of the United States Coast Signal Service is presented in the report of Capt. John R. Bartlett, who was superintendent of that service. This institution was born out of the emergency created by the war, and Capt. Bartlett shows how, within one week after the orders had gone out by telegraph, the entire coast was under observation from a chain of stations extending from Maine to Texas. There were eight districts, in which were represented 36 signal stations, officered and manned by the state naval militia, a force of 18 officers and 210 men. These were reinforced by the watchful crews of the life-saving service, including 1,441 men, the alert light-keepers in the light-houses, numbering 850 men, and the personnel of the Weather Bureau, with a total number of 33 observers. Thus an aggregate of 2,552 men were on the lookout for the approach of an enemy's vessel or a suspicious craft of any sort, and ready to report the movements of the vessels belonging to our own forces, including all the auxiliary ships and transports.

Capt. Bartlett says that the practical operation of this service for the three months of its existence has convinced him that it would have served the use for which it was established, namely, to observe and report the approach of any enemy's vessel. Then it served an excellent purpose in advising the department of the movements of United States vessels. But the most valuable result of the test, in the judgment of Capt. Bartlett, has been to determine the points along the coast at which signal stations are necessary. The captain thinks that the coast signal service should be an integral part of a national coast defense system, maintained by the naval militia, of whose service he speaks in the highest terms.

As an outline of a permanent system, such as is maintained by every European country, Capt. Bartlett suggests that each life-saving station should be made a coast signal station, the trustworthy and well disciplined crews making good material for signal men.

A NATIONAL NAVAL RESERVE.

In his annual report Secretary Long will recommend the establishment of a national reserve. Capt. Crowninshield, chief of the navigation bureau, and Capt. Bartlett, chief of the auxiliary naval force, which was recently disbanded, have the matter under advisement. Capt. Crowninshield will draft a bill which, he hopes will be passed by Congress.

The bill will provide that the naval militia of the several states shall be responsible first to the state and then to the government. It will also provide that the reserves may be called into active service in time of war, either as an organization or as individuals. The plan contemplates placing one officer in personal charge of the reserves and the assignment to each state reserve of one or more officers as instructors.

Ships will be furnished by the government for drill purposes, which will be supplied with suitable guns and ammunition for target practice. The naval militiamen will be given sea service under this plan. It is proposed to send them to sea on men-of-war for several weeks each year. I has also been suggested that it would be advantageous to adopt the British plan of assigning officers of the grade of ensign and lieutenant to men-of-war to serve six months in every four years. Certificates from the commander in chief are given British officers for such service, which aids them both in a professional and business way upon return to civil life.

There is no doubt in the minds of department officials that the naval reserves rendered valuable services during the war and out of the excellent record made by the reserves grew this plan for one of a national character.

PROTECTION FOR AMERICAN SHIPPING.

The Philadelphia Board of Trade has adopted resolutions urging Congress "to consider at the approaching session what action is needed to restore to the United States the ocean carrying trade in vessels sailing under the American flag," and is asking other trade bodies, and the press of the country at large, to co-operate in an effort to secure a rehabilitation of the American shipping trade.

The importance of sea power to the United States was illustrated by the operations of the navy during the war, and Congress will hereafter give more consideration to the estimates of the Navy Department in regard to additions to the fleet. An increasing navy will call for a larger number of seamen from among whom enlistments may be made. Great Britain's shipping trade has been of immense advantage to her navy in providing it with able seamen, and only recently the British admiralty expressed regret because a decline in the shipping trade might reduce the volume of the supply of able seamen for the British warships. The United States will never require a navy equal in extent to that of Great Britain, but we may have a commercial navy in the course of time that will be greater than the commercial navy of any other nation in the world.

There is now a more general endorsement of James G. Blaine's declaration that "if since the civil war the United States had spent in protecting her shipping merely the annual interest on the great sum which England has expended to protect her ocean traffic, American fleets would now be rivaling the fleets of England," and agitation in favor of restoring the American flag to the seas will soon compel Congress to act.

LAKE FREIGHTS.

The 80 cent ore rate mentioned in our last issue as being likely obtainable in a few days from the head of the lakes, was brought about and now there is a further claim that 85 cents has been paid and that 70 cents has been offered from Escanaba. However, as offerings are light and the bulk of the best class of tonnage is carrying grain, the 65 cent Escanaba rate and 80 cents from Duluth is the quotable rate at present, with every likelihood and indication of a raise.

The Chicago corn rate has advanced to 2¼ cents with brisk chartering, this notes a ½ cent raise for the week; Lake Ontario, 3½ cents; early November wheat has been chartered from Duluth at 3 cents; Erie canal rates are strong at 2⅜ cents on corn to New York.

Coal rates remain at last week's quotations 25 cents Buffalo to Chicago, 20 cents to Lake Superior; from Ohio ports 35 cents was paid to Milwaukee and 40 cents to Racine.

Lumber rates from Duluth to Chicago, have gone up to $2.25 per M. feet.

UNITED STATES AND CANADA GRAIN SUPPLY.

The stocks of grain in Chicago elevators last Saturday evening were 1,600,000 bushels of wheat, 10,147 bushels of corn, 815,000 bushels of oats, 153,000 bushels of rye, and 112,000 bushels of barley. Total, 12,887,000 bushels of all kinds of grain, against 26,701,000 bushels a year ago. For the same date, the Secretary of the Chicago Board of Trade states the visible supply of grain in the United States and Canada is 12,210,000 bushels of wheat, 22,202,000 bushels of corn, 5,469,000 bushels of oats, 718,000 bushels of rye, and 2,319,000 bushels of barley. These figures are larger than the corresponding ones a week ago by 947,000 bushels of wheat, 796,000 bushels of corn, 22,000 bushels of oats, smaller by 53,000 bushels of rye, and larger by 699,000 bushels of barley. The visible supply of wheat for the corresponding week of a year ago increased 1,690,000 bushels.

INSPECTOR OF HULLS.

TREASURY DEPARTMENT,
STEAMBOAT INSPECTION SERVICE,
NEW LONDON, CONN., October 25, 1898.

The United States Civil Service Co nmission announces that on October 25, 1898, examination will be held in any city in the United States where the Commission has a board of examiners, for the position of inspector of hulls, Steamboat-Inspection Service (Treasury Department).

There is at present a vacancy in this grade, in the New London, Conn., district, at a salary of $1,800 per annum.

Applicants must have had at least five (5) years' actual and practical experience as masters or first-class pilots of steam vessels of over one hundred (100) gross tons, on inland waters. A portion of the required five (5) years' experience must have been within the five (5) years next preceding the date of application, which five (5) years' experience must have been under United States license of the highest grade granted upon the waters on which the applicant has been so employed, and the fact that applicants have been so licensed must be of record in the Treasury Department.

The examination will consist of the subjects mentioned below, which will be weighted as follows:

LETTER WRITING	10
ARITHMETIC—Consisting of problems in common and decimal fractions, mensuration and square root	10
HULL CONSTRUCTION—Comprising questions relating to construction and strength of wood and iron hulls of vessels, and a description of various parts and methods of joining the same	30
PILOT RULES AND INLAND NAVIGATION—Comprising questions on the pilot rules of the board of supervising inspectors of steam vessels and inland navigation	20
LIFEBOATS AND LIFERAFTS—Comprising questions relating to the capacity of lifeboats and liferafts	10
EXPERIENCE	20
TOTAL	100

The Commission invites attention to the fact that there is a dearth of eligibles for positions of this grade, and it is hoped that all persons who are qualified will apply for examination.

This examination is open to all citizens of the United States, who comply with the requirements, without regard to race or to political or religious affiliations. All such citizens are invited to apply. They shall be examined, graded and certified, with entire impartiality and wholly without regard to any consideration save their ability as shown by the grade they attain in the examination. But attention is invited to the fact that preference will be given to eligibles who are legal residents of the First (1st) and Third (3d) Congressional Districts of Connecticut for appointment to the vacancy at New London.

Persons desiring to compete should at once write to the United States Civil Service Commission, Washington, D. C., for a copy of the Manual, and for application blanks, Forms 304 and 363, which should be properly executed and promptly forwarded to the Commission at Washington.

IN SEARCH OF ANDREE.

A dispatch from Stockholm states that the Arctic navigator, Herr J. Stadling, who was sent out in charge of an expedition by the Swedish Geographical and Anthropological Society to search for Prof. Andree, sends the following dispatch from Bulqur, near the Lena Delta. It is dated July 19:

"Thus far we have not been able to discover any trace whatever of Prof. Andree and his balloon, nor have we met anyone who has sighted the arctic aeronauts or their airship. We have made considerable headway in the construction of the boat with which we expect to travel to the mouth of the Olensk in September. From Olensk we expect to proceed by sledges to Chatanga, which, under favorable conditions, we hope to reach not later than the middle of October.

"Should it be necessary we will proceed northward from Chatanga in March, 1899. Even if we should come across Prof. Andree and his companions, we may not be able to send you a report before next summer."

FOR WINTER SERVICE.

The car ferries of the Ann Arbor Railroad will run the coming winter between Cedar River and Michigan Point. Green Bay does not freeze up between Cedar River and Death's Door Entrance, and it is expected that the line can be operated without interruption from ice. From Cedar River, which is thirty miles north of Menominee Point, the railroad is being constructed to the Chicago and Northwestern.

CHIPS FROM THE MASTERS' MANUAL.

(Communicated.)

The science of navigation, as a branch of mathematics, is mathematics applied to pratical navigation, and, therefore, deals with exact definitions and results; vagueness and indefiniteness are foreign to it, being the opposites of exactness. From this point of view the nautical part of the Masters' Manual fails to come up to the standard in more than one respect.

Page 67. "Latitude and Longitude." "The earth is globular and revolves about its center, or polar axis; hence a simple method of referring to the position of any portion of the earth has been found by arbitrarily dividing the different circumferences of the earth by means of circles, numbering them, and dividing them into degrees, minutes and seconds. The number of these circles start from the equator for latitude, and a prime meridian (meridian of Greenwich) for longitude. These divisions are called latitude and longitude, and form the basis of surveying, navigation and time measurement, hence they are found on all maps, globes, etc."

Center or polar axis is not exact, and should read, "axis of rotation." Different circumferences of the earth divided by means of circles numbered from the equator for latitude, and a prime meridian for longitude, are the means of referring to the position of any portion of the earth. Can anything be more vague and indefinite? How many circumferences has the earth, and how is the circumference of a circle divided by circles? If anybody can find this out, he may be able to find "the position of any portion of the earth," in some of the "divisions called latitude and longitude;" but he will never get at the exact meaning of latitude and longitude.

Page 67. "Relation of Circular Measure to Time." "The earth revolves on its axis from west to east, making a complete revolution in twenty-four hours. The circumference of every circle is divided into 360°; hence dividing 360° by 24= 15°, and 15° of circular measure is equivalent to one hour of time."

Here the revolution in twenty-four hours is made the cause of the division, whereas the division of the circles into 24 hours is as arbitrary as its division into 360 degrees; the revolution of the earth having nothing to do with it. Sidereal time, mean time, apparent time, or any other time, is divided into 24 hours, although the hours compared with one another are of different duration.

Page 74. "The(se) magnetic poles are respectively the points on the earth towards which the magnetic needle directs itself, or where the intensity of the magnetic force (of the earth) is a maximum."

According to the English Admiralty Manual, the points of maximum intensity, designated as "magnetic foci" are near, but not at the poles. In the northern hemisphere there are two such foci, and it is believed that there are two corresponding in the southern hemisphere.

Page 74. "The general law of magnetism is that like poles repel, and unlike poles attract." What do they repel, or attract? The student is to find it out himself.

Page 75. "In sailing by chart the north point of the compass card should point as many degrees to the westward, or to the eastward of the North star as the chart compass rose calls for."

Remember well, in sailing by chart, from which may be inferred: If you do not sail by chart it is immaterial in what direction the needle points; or, if the compass does not point as in the chart, you should not, or cannot sail by it.

Page 75. "Variation is the difference between the true geographical north and the magnetic north." Should read: Variation is the angle between the magnetic meridian and the true meridian.

Page 75. "Deviation is the error of the compass, caused by the attraction of the iron or steel of the ship." Should read: "Deviation is the deflection of the compass from the magnetic north, caused by the magnetism of the iron, etc."

Pages 75, 76, 77. On these pages are found, error of variation, variation error, deviation error, compass error, where merely variation and deviation are concerned, which by themselves are well defined quantities, and no errors. Compass errors do not consist of variation or deviation, or both combined, but are the result of faulty workmanship. Variation and deviation, as well as leeway, are corrections and not errors, as is also the correction for current. Variation errors, deviation errors, leeway errors, are errors in the quantities designated and not the quantities themselves.

Page 76. "The true course of a ship is the angle the ship's track makes with the true meridian. The magnetic course is the angle that the ship's track makes with the magnetic meridian. The compass course is the angle the ship's track makes with the north and south line of the compass of the ship."

The ship's track is always the course made good, which is generally expressed either as magnetic or true; but as the ship's track differs from the compass course steered, by the amount of the correction for leeway and current combined, the compass course steered, never equals the angle which the ship's track makes with the north and south line of the compass of the ship, except the correction for leeway and current be zero. By compass course, is always understood, the course the vessel is headed on by the ship's compass.

Page 78. "Horizontal iron on board of ship has a varying action on the compass."

The fact is, every magnetic ship's pole has a varying action on the needle, because of its varying position in reference to the needle as the ship swings round. While in vertical iron the force of the poles remains constant during the swing, it varies in horizontal iron, in consequence of which a deviation is produced, known as the quadrantal deviation, different from the deviation produced by vertical iron.

Page 87. "This condition, namely, keeping the course constant, is the most convenient in practice, and besides, produces in all calculations in which the place of the ship is concerned, the utmost simplicity of which they are capable; and the mariner, in making passages of short duration, such as are required on the Great Lakes, is thus rid of all resort to astronomical navigation."

We have heard of ærial navigation, but astronomical navigation smacks of the higher spheres. The grist of the whole passage is, keeping the course constant does away with astronomical observations on the lakes, being due, it is asserted, to the new hydrographic office charts of the lakes, which "will provide the maximum facility for navigating under the conditions that prevail on the waters that they cover."

This statement is partly contradicted by the fact that nobody is able to steer a straight, true course, because of the change of the variation; and partly by the fact that the hydrographic office charts, covering large areas of the lakes, afford the "least" facilities for navigating "on the waters that they cover," because of the small scale on which they are drawn, and the lack of all details as to buoys, shoals, reefs, and the configuration of the ground. Not the H. O. charts, but the extensive light-house service, has done away with astronomical observations on the lakes.

Page 88. In contrast to Mercator charts, "in every other kind of nautical chart, the straight track line, unless it coincides with the meridian, crosses the successive meridian lines at varying angles, and in order to follow the track that is laid out, it is necessary to alter the true course from time to time as the ship proceeds upon her voyage. To make the required alteration in the course, it is necessary to know the latitude and longitude of the position of the ship, and for the finding of these elements vessels navigating the waters of the lakes are not generally equipped."

In view of this criticism, not intended for, but applicable to, the old lake charts, it seems to be a wonder that lake captains during the last fifty years have managed to get along with those charts, without altering the true course, from time to time, and without caring for latitude and longitude. The secret is, that in order to find straight, true courses by those charts, the straight line between any two places is referred as a makeshift to the meridian, midway between those places, by which the straight, true course is found, and the straight course is represented in the chart by a curve deviating at the center of the straight line $\frac{1}{40}$ the length of the line multiplied by the difference of the meridians through the two places, in points. A similar makeshift is used by lake captains when the variation changes, to make good a straight, true course at the finish. All of which shows, that respecting charts and straight courses, lake captains, in their daily practice, have been far in advance of the theories presented in the Masters' Manual, which theories, although partly correct, are of no practical use.

Exactness of methods and definitions, is the first requisite in books of navigation, without which, study becomes a burden instead of pleasure.

JOHN MAURICE,
Civil Engineer and Nautical Expert.

Chicago, October 12, 1898.

EASTERN FREIGHT REPORT.

Messrs. Funch, Edye & Co., New York, in their weekly freight report to the RECORD, state that the advance in freights for grain cargoes, for cotton and for time boats appears to have culminated in the early days of this week, and the advancing tendency has, for the moment, been checked. Grain shippers have recently rechartered boats previously taken, owing to the small arrivals of wheat, as the farmers appear to be fighting for an advance in prices, and the increased offerings of tonnage has equally caused charterers to reduce their limits. There evidently remains some uncovered requirement from the Atlantic cotton ports for October tonnage, which, since owners' views for grain cannot momentarily be secured, may soon be filled at the good figures presently still offering; the gulf ports appear to have well supplied their pressing wants, and charterers there are looking for lower offers of tonnage. The urgent demand of some charterers for prompt tonnage has led to the placing of a number of boats on time at unusually high figures, entirely ignored by the usual time charterers, whose needs are not of an immediate character. In view of the advance established for the three branches above referred to, little has been done in other trades, the charterers in which have generally assumed a waiting position.

Sail tonnage continues scarce, but, as there is no improvement in the demand on the part of shippers, we can only again report that business in this branch continues slow, without appreciable change of rates in any direction.

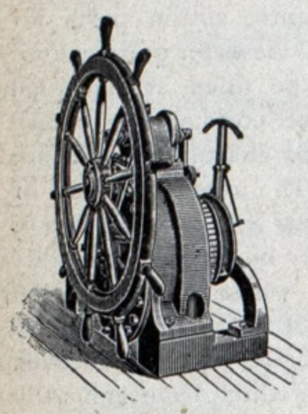
OCTOBER STORMS.

October has always had the reputation among lake vessel men of being a month characterized by considerable tempestuous weather. This fact lends considerable interest to the storm forecast contained in the monthly chart just issued by the Weather Bureau. The forecast is as follows: "There is an increase both in the number and violence of lake storms in October, as compared with September. The squall winds and thunderstorms of the warm season have now given way to a different class of storms, viz. those of the winter. These are more regular in their occurence and movement, sweep over larger areas, and develop greater strength than those of summer. They are generally preceded in the lake region by higher temperature, increasing cloudiness, and moderately high winds from some easterly or southerly quarter which blow steadily as compared with the short-lived squall winds of summer. The greater number of October storms pass over the northern or Superior route. The number that move northeasterly from the central valleys, however, is greater than during the preceding month and the storms are more apt to be accompanied by high winds and gales. On the average five storms pass directly over the lake region in October, the majority of which, however, can be safely weathered by the larger craft.

Occasionally an October storm of unusual severity sweeps over the lakes, endangering the safety of the strongest vessels. In the last twenty years half a dozen such storms have occurred, all of which left a trail of destruction in their wake. One of the most severe storms in the annals of lake shipping occurred October 16-17, 1880. The coming of this storm with the attendant changes in the elements—the passage in a few hours from the delightful weather of autumn to a howling gale with snow squalls and freezing temperature—illustrates one phase of lake weather that happily we are not often called upon to chronicle. The dangerous storms of the Great Lakes almost invariably come from some westerly direction. The violent winds are confined to the central portion of the storm, which is generally as large as the lake itself, hence there is nothing to be gained by altering the course of the ship as might be advisable on the high seas. As has been stated previously the hardest blow almost invariably occurs with the shift of the wind to the southwest or northwest, as the storm center passes the vessel. Whether the wind shifts from southeast to southwest, or backs from northeast to northwest, depends upon the position of the vessel with regard to the storm center. The great majority of the high winds come from a westerly quarter, west or southwest on the lower lakes, and from southwest to northwest on the upper lakes. High winds from an easterly quarter rarely prevail at Duluth. In the latter case the direction of the wind is doubtless influenced by local topography.

IT is stated that the deposit of Portland cement discovered near Owen Sound, Ontario, and the manufacture of which was begun in 1889, is proving practically inexhaustible, and the daily capacity of the factory will soon be increased to 300 barrels. The prevailing price is $2.10 per barrel of 350 lbs. net. The product is claimed to be fully equal to the English, German or Belgian article, and, it is said, will eventually take the place of importations to Canada at least.

Queen City Patent Hydraulic Steerer.



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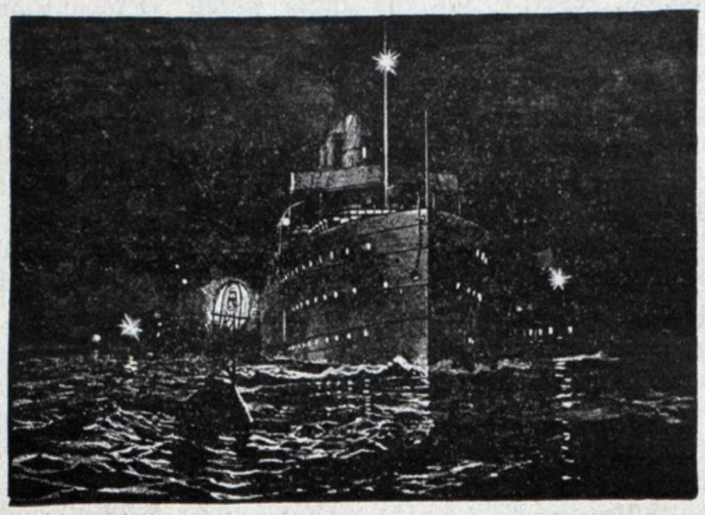

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Straits of Mackinac Chart

The Hydrographic Office has just issued a new survey of the Straits of Mackinac, extending from Sturgeon Point and Thunder Bay on the East, to a meridian running through Point Betsie on the West.

This survey is the latest and best. The chart is on a large scale, measuring about 3x4 feet. Price $1.00.

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STORM WARNING SIGNALS.

Warnings of the approach of storms are published by the display of flags by day and lanterns by night, in connection with bulletins posted and reports furnished to newspapers, mariners and others interested.

The signals adopted by the Weather Bureau for announcing the approach of windstorms are as follows:

THE STORM SIGNAL—A red flag eight feet square, with black center three feet square, indicates that the storm is expected to be of marked violence.

THE RED PENNANT—Eight feet hoist and fifteen feet fly, displayed with the flags, indicates easterly winds—that is, from northeast to south, inclusive, and that the storm center is approaching.

THE WHITE PENNANT—Eight feet hoist and fifteen feet fly, displayed with the flags, indicates westerly winds—that is, from north to southwest, inclusive, and that the storm center has passed.

When the red pennant is hoisted above the storm signal winds are expected from the northeast quadrant; when below, from the southwest quadrant.

NIGHT STORM SIGNALS—By night, a red light will indicate easterly winds; a white light above a red light will indicate westerly winds.

THE INFORMATION SIGNAL—Consists of a red or white pennant, displayed alone, and is a warning that winds dangerous to tows and small vessels may occur at the station displaying the signal. The red pennant indicates easterly winds and the white pennant westerly winds. No night information signals are displayed.

THE HURRICANE SIGNAL—Two storm-signal flags, red with black centers, displayed one above the other, indicates the expected approach of tropical hurricanes, and also of those extremely severe and dangerous storms which occasionally move across the lakes and the northern Atlantic coast. No distinctive night hurricane signal will be displayed, but when this signal is ordered during the day and is not lowered or changed before dark, the night storm signal will be displayed, the direction to be determined by the information contained in the message accompanying the order to hoist.

When orders to hoist this signal are received at any weather bureau station every effort will be made by the officials and employes of the service to give the warnings the widest possible distribution, and all vessels will be notified that it is dangerous to leave port.

REPORT OF FREIGHT AND PASSENGER TRAFFIC

TO AND FROM LAKE SUPERIOR FOR THE MONTH OF SEPTEMBER, 1898, INCLUDING STATISTICS OF THE UNITED STATES AND CANADIAN CANALS AT SAULT STE. MARIE, MICHIGAN AND ONTARIO.

EAST BOUND.

ITEMS.	US CANAL	CANAD'N CANAL	TOTAL
Copper, net tons	12,341	30	12,371
Grain, bushels	2,469,461	67,572	2,537,033
Building Stone, net tons	607	.....	607
Flour, barrels	841,252	196,655	1,037,907
Iron ore, net tons	1,587,291	133,149	1,720,440
Iron, Pig, net tons	5,950	.....	5,950
Lumber, M. ft. B. M	139,544	219	139,763
Silver Ore, net tons	.....	.....	.....
Wheat, bushels	8,523,001	1,376,999	9,900,000
Unclass'd Freight, net tons	26,100	2,925	29,025
Passengers, number	2,082	1,037	3,119

WEST BOUND.

ITEMS.	US CANAL	CANAD'N CANAL	TOTAL
Coal, (hard) net tons	63,527	12,010	75,537
Coal, (soft) net tons	357,109	53,565	410,674
Flour, barrels	25	.....	25
Grain, bushels	11,490	.....	11,490
Manufactured Iron, net tons	16,040	220	16,260
Salt, barrels	21,390	.....	21,390
Unclass'd Freight, net tons	45,112	4,526	49,638
Passengers, number	2,512	886	3,398

East Bound Freight, net tons	2,465,466
West Bound Freight, net tons	552,750
Total	3,018,216
Total Craft, United States	2,069
Total Craft, Canadian	338
Total	2,457
Total Registered Tonnage, United States	2,389,691
Total Registered Tonnage, Canadian	282,737
Total	2,672,428

NOTICE TO MARINERS.

LIGHT-HOUSE ESTABLISHMENT,
OFFICE OF THE LIGHT-HOUSE INSPECTOR, 9TH DISTRICT,
CHICAGO, ILL., October 6, 1898.

LAKE MICHIGAN—WRECK SPAR BUOY.

Notice is hereby given that on October 3d, 1898, a spar buoy, painted black, was established in 19 feet of water, on the northerly side of, and close to, a sunken wreck in Bailey Harbor, Michigan.

The wreck lies about 400 feet west of the range. Old (discontinued light) tower, S. 75° E., E. S. E. 5/8 E., 15-16 of a mile. Life-saving station, N. 68° 15′ E., E. N. E., 1/8 E., 1 1-16 of a mile. Front Range light, N. 12° 45′ W., N. by W. 1/8 W., 7/8 of a mile. Bearings are true. Miles are statute miles.

By order of the Light-House Board.

LAKE MICHIGAN—WRECK GAS BUOY.

Notice is hereby given that the gas buoy marking the wreck of the schooner Winslow, near White Shoal, Straits of Mackinac, has been relighted.

By order of the Light-House Board.

C. O. ALLIBONE, Commander U. S. Navy,
Inspector 9th L. H. District.

VISIBLE SUPPLY OF GRAIN

As compiled for The Marine Record, by George F. Stone, Secretary Chicago Board of Trade.

CITIES WHERE STORED.	WHEAT. Bushels.	CORN. Bushels.	OATS. Bushels.	RYE. Bushels.	BARLEY Bushels.
Buffalo	641,000	1,438,000	1,166,000	52,000	503,000
Chicago	1,660,000	10,147,000	815,000	153,000	112,000
Detroit	153,000	140,000	10,000	29,000	6,000
Duluth and Superior	2,146,000	1,092,000	105,000	60,000	623,000
Milwaukee	36,000	.....	.....	5,000	104,000
Montreal	112,000	14,000	371,000	17,000	10,000
Oswego	.....	38,000	.....	.....	15,000
Toledo	340,000	176,000	34,000	8,000	.....
Toronto	18,000	.....	5,000	.....	12,000
On Canal	17,000	1,144,000	148,000	.....	270,000
Grand Total	12,210,000	22,202,000	5,469,000	718,000	2,319,000
Corresponding Date, 1897	22,794,000	37,704,000	13,383,000	2,944,000	2,772,000
Increase	947,000	796,000	22,000	.....	699,000
Decrease	.....	.....	.....	53,000	.....

While the stock of grain at lake ports only is here given, the total shows the figures for the entire country except the Pacific Slope.

THE CARNEGIE GUN FOUNDRY.

Press reports state that plans are being prepared by the Carnegie Steel Co. for a gun foundry to rival that of Krupp, the German gun builder. The plant will be located at Homestead, within half a mile of the Homestead armor mills, and will employ over 2,000 men, and the company is preparing also to go into the shipbuilding business. A railroad to strike tide water at Newport News or Norfolk, Va., is under way.

The land for the plants contains thirty-five acres and cost $350,000. It fronts 1,600 feet on the Monongahela River and has an average depth of about 1,300 feet. Three lines of railroad run through it. The Union Railroad connects all the plants of the Carnegie Steel Co. The Carnegie plants at Rankin, Braddock, Duquesne and Homestead are now connected by the famous Hot Metal route of the Carnegie Steel Co. This economical arrangement, coupled with their own short ore line to Lake Erie, has enabled the Carnegie Co. to dictate terms to their competitors.

Heretofore the company has confined its business entirely to manufacturing material. Now it proposes to enter into the business of using its own product. The plans for the foundry are for four immense buildings. One will be used as a casting hall. The built-up gun, made of thin strips and built by a process known only to the Carnegie Co., will be the chief article of manufacture. It is claimed to be far in advance of anything yet conceived, and that it will revolutionize modern armament, both naval and coast. Great machine shops will occupy the other buildings.

The shipyards are to be located immediately below the gun works and will have the latest and most approved contrivances. Steel ways will be built into the river, and several great buildings will be erected for the construction. It is intended to build river craft of all kinds, lighters, and smaller ocean-going vessels.

MORE LAKE SHIPBUILDING.

The work of laying the keels for the two big wooden schooners, mention of which was recently made in the RECORD, will be commenced at the Davidson yard next week. The yard will probably give employment to about 600 men during the entire winter.

The new boats will be duplicates of the schooners Chickamauga and Chattanooga that were launched last summer. They will be 335 feet long, 45½ feet beam and 26 feet deep, and will have a carrying capacity of 160,000 bushels.

SUN'S AMPLITUDES.

The following approximate amplitudes of the Sun's rising will be given each week in this column during the season of navigation. A second bearing may be taken by compass at sunset by reversing the east bearings given for the nearest latitude, as the change in declination for a few hours makes but a slight difference in the true bearing of the Sun's setting:

LAKE ERIE AND S. END LAKE MICHIGAN, LAT. 42° N.

Sunrise.	Bearing.	Bearing.
October 14	E. 11° S.	E. by S.
October 17	E. 12° S.	E. by S. ⅛ S.
October 20	E. 14° S	E. by S. ¼ S.

LAKE ONTARIO, S. END HURON AND CENTRAL PORTION LAKE MICHIGAN, LAT. 44° N.

Sunrise.	Bearing.	Bearing.
October 14	E. 11° S.	E. by S.
October 17	E. 13° S	E. by S. ⅛ S.
October 20	E. 14° S	E. by S. ¼ S.

N. END LAKES HURON AND MICHIGAN, LAT. 46° N.

Sunrise.	Bearing.	Bearing.
October 14	E. 12° S.	E. by S. ⅛ S.
October 17	E. 14° S	E. by S. ¼ S.
October 20	E. 15° S	E. by S. ⅜ S.

LAKE SUPERIOR, LAT. 48° N.

Sunrise.	Bearing.	Bearing.
October 14	E. 12° S.	E. by S. ⅛ S.
October 17	E. 14° S	E. by S. ¼ S.
October 20	E. 16° S	E. by S. ⅜ S.

With a compass correct magnetic, the difference between the observed and true bearing or amplitude will be the variation for the locality. Should there be any deviation on the course the vessel is heading at the time of taking the bearing, the difference between the observed and the true amplitude after the variation is applied, will be the amount of deviation on that course. If the correct magnetic bearing is to the right of the compass bearing, the deviation is easterly, if to the left, the deviation is westerly.

THE FIRST LOCK AT THE "SOO."

R. A. Eva, general agent of the Northern Pacific road is in possession of a photograph of the first lock ever built at the Sault as an aid for vessel communication between Lake Superior and the waters beyond. It is commonly supposed that the first lock was built in the '50s of the present century, but it has been established that the Hudson Bay Company built one on the Canadian side in 1797, and it is a picture of this that Mr. Eva has obtained. The lock afforded a lift of nine feet for vessels coming to Lake Superior and was of small size, as the boats on these waters a century ago were mere sail boats or canoes. The old lock lay for many years unnoticed, and it appears that its existence was known to few until recently.

COAL TRADE OF MILWAUKEE.

As compared with last season, when the article was scarce, the receipts of coal in Milwaukee during the season of navigation now nearing its close were considerably larger. During the present season, and up to October 1st, the receipts in Milwaukee by water, were as follows: Anthracite, 516,617 tons, as against 330,658 tons for the same period in 1897. The receipts of bituminous coal this year, up to October 1st, were 508,036 tons, against 304,217 tons in 1897.

The foregoing figures show that during the season of 1898, up to October 1st, 203,821 tons more of bituminous coal were received in Milwaukee than during the same period last season, and 185,959 tons more anthracite this season than a year ago. The total receipts this season of both kinds, up to October 1st, were 1,024,653 tons as against but 634,875 tons during the same period in 1897, an increase of both kinds this season of 389,778 tons over that received in the same period last year.

ADDRESS WANTED.

John Norvell, please write to Myles Maloney, 912 7th street, Port Huron, Mich. Important news. If anyone knows of Mr. Norvell's whereabouts, please advise above named. 41–45

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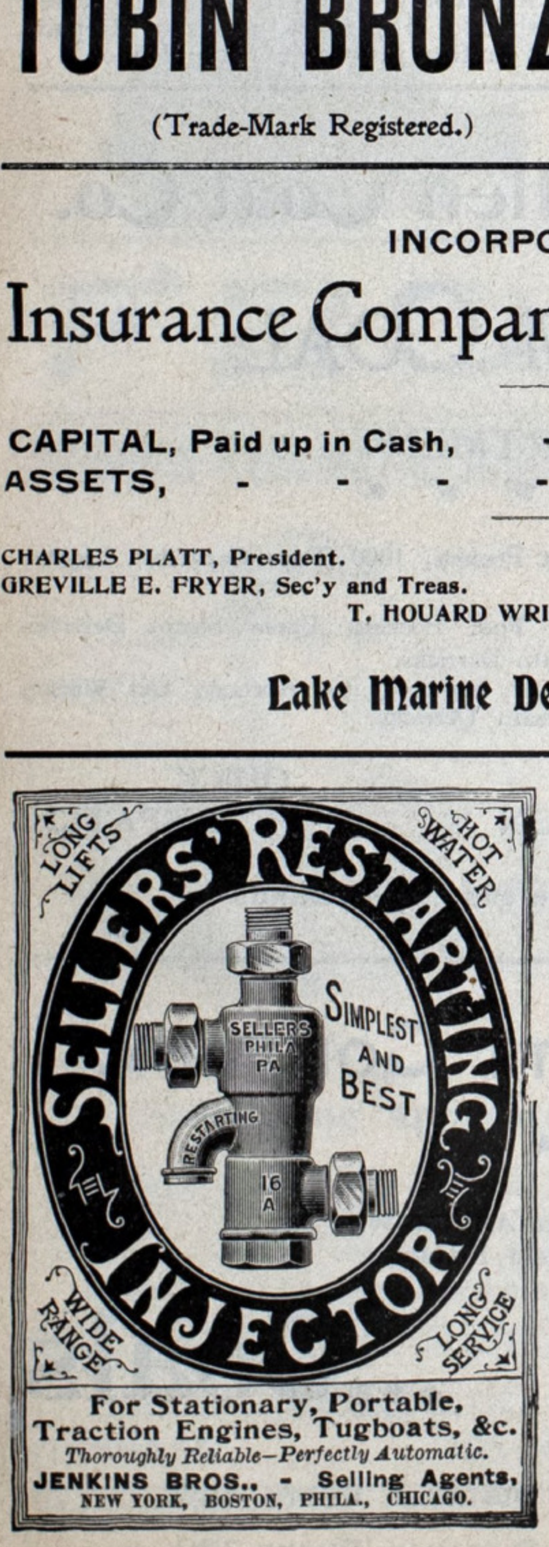

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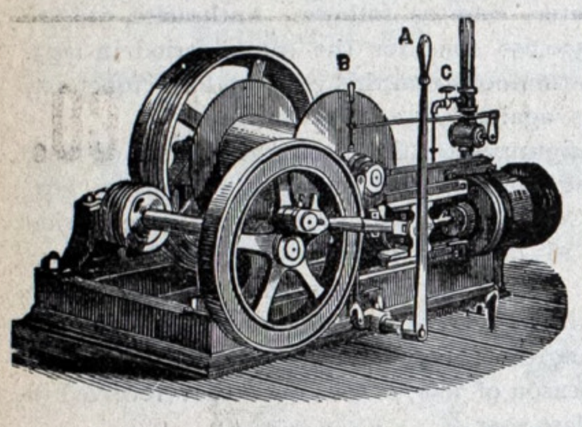

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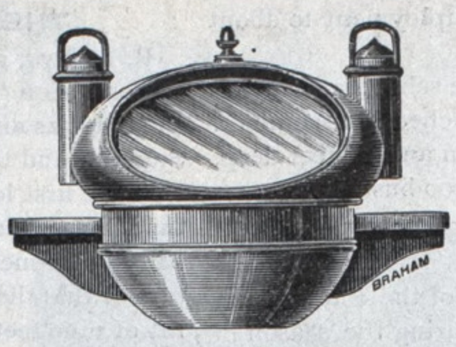

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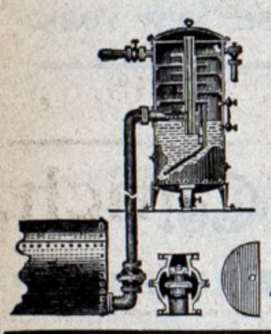

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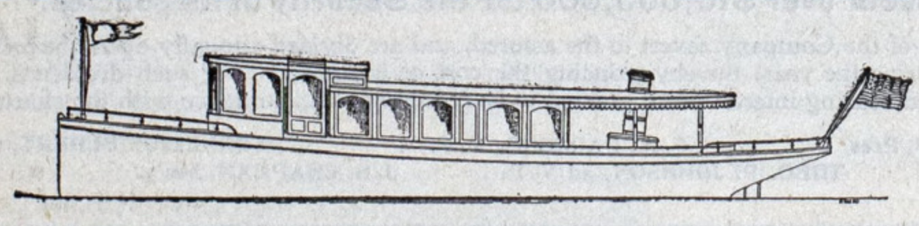

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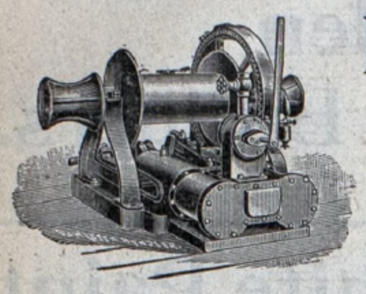

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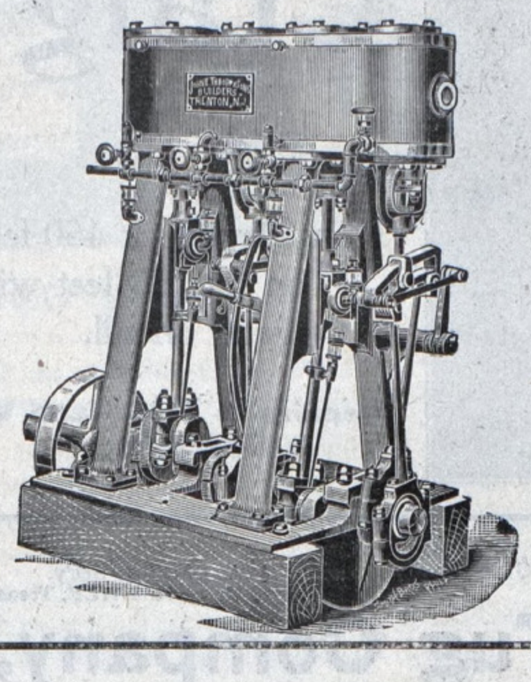

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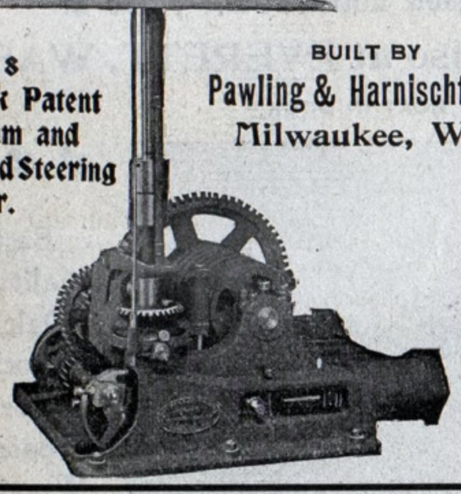

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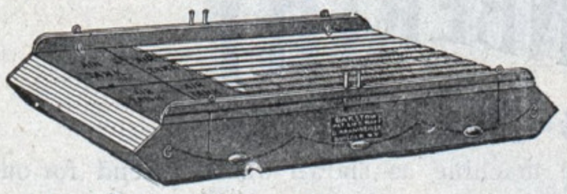

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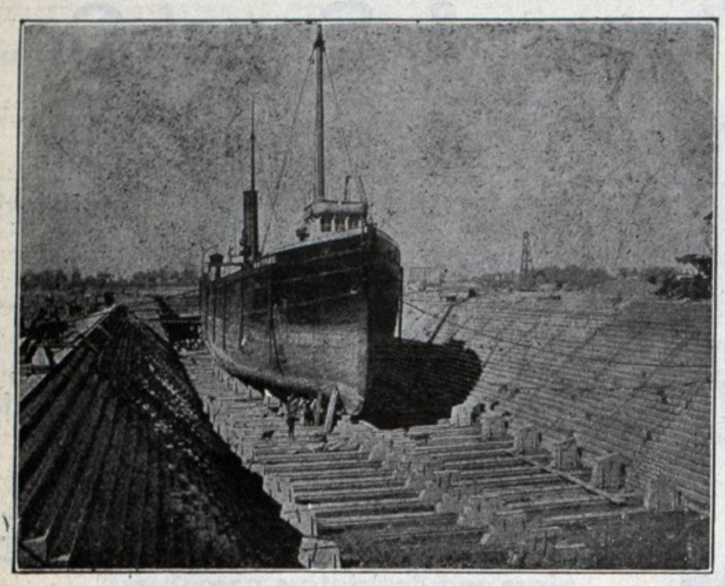

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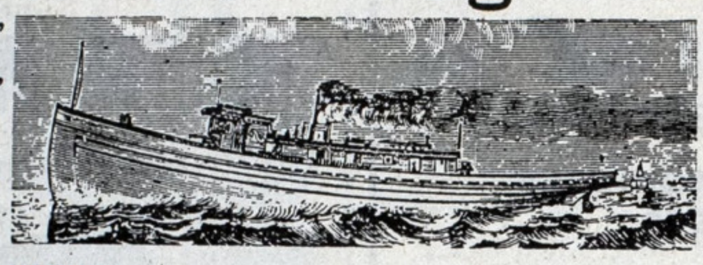

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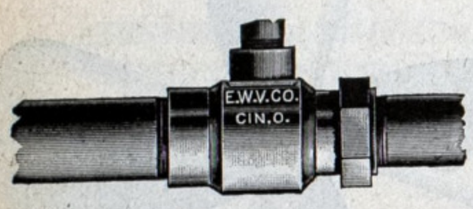

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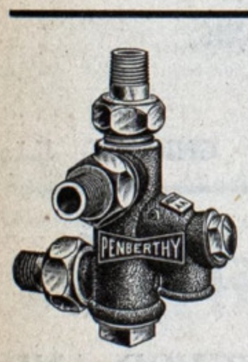

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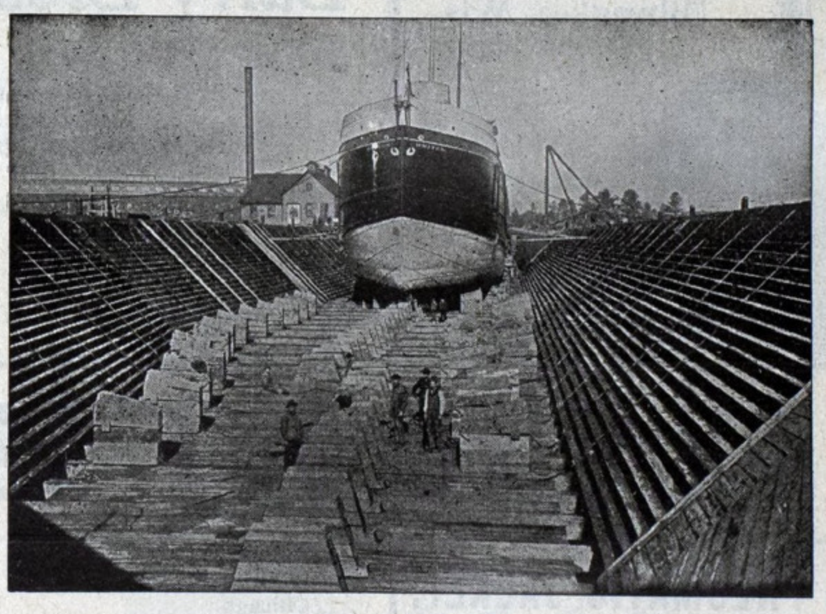

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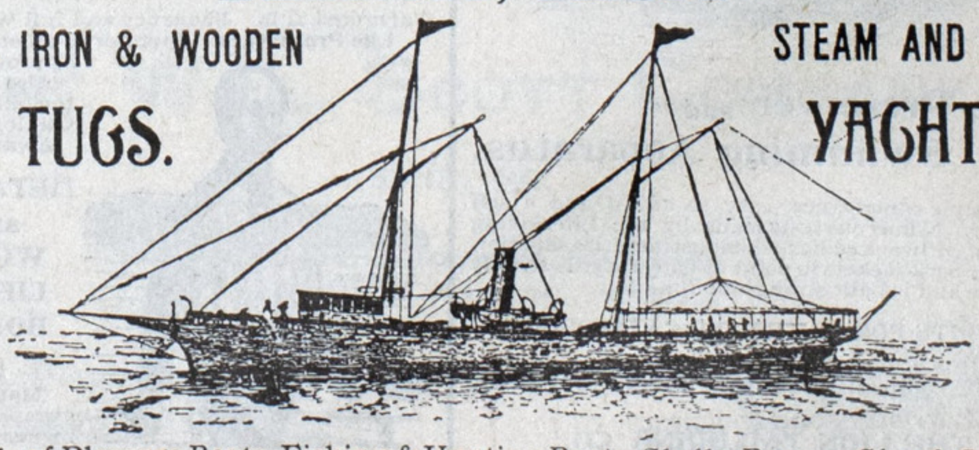

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